of the third Part of this Book, if the rays be made oblique to the Glaſs, the thickneſs of the Glaſs requiſite to tranſmit the ſame bright Light of the ſame Ring in any obliquity is to this thickneſs of $\frac{1}{4}$ of an Inch, as the ſecant of an Angle whoſe ſine is the firſt of an hundred and ſix arithmetical means between the ſines of incidence and refraction, counted from the ſine of incidence when the refraction is made out of any plated Body into any medium incompaſſing it, that is, in this caſe, out of Glaſs into Air. Now if the thickneſs of the Glaſs be increaſed by degrees, ſo as to bear to its firſt thickneſs, (*viz.* that of a quarter of an Inch) the proportions which 34386 (the number of fits of the perpendicular rays in going through the Glaſs towards the white Spot in the center of the Rings,) hath to 34385, 34384, 34383 and 34382 (the numbers of the fits of the oblique rays in going through the Glaſs towards the firſt, ſecond, third and fourth Rings of Colours,) and if the firſt thickneſs be divided into 100000000 equal parts, the increaſed thickneſſes will be 100002908, 100005816, 100008725 and 100011633, and the Angles of which theſe thickneſſes are ſecants will be $26' 13''$, $37' 5''$, $45' 6''$ and $52' 26''$, the Radius being 100000000; and the ſines of theſe Angles are 762, 1079, 1321 and 1525, and the proportional ſines of refraction 1172, 1659, 2031 and 2345, the Radius being 100000. For ſince the ſines of incidence out of Glaſs into Air are to the ſines of refraction as 11 to 17, and to the above-mentioned ſecants as 11 to the firſt of 106 arithmetical means between 11 and 17, that is as 11 to $11\frac{6}{106}$, thoſe ſecants will be to the ſines of refraction as $11\frac{6}{106}$ to 17, and by this Analogy will give theſe ſines. So then if

if the obliquities of the rays to the concave ſurface of the Glaſs be ſuch that the ſines of their refraction in paſſing out of the Glaſs through that ſurface into the Air be 1172, 1659, 2031, 2345, the bright Light of the 34386th Ring ſhall emerge at the thickneſſes of the Glaſs which are to $\frac{1}{4}$ of an Inch as 34386 to 34385, 34384, 34383, 34382, reſpectively. And therefore if the thickneſs in all theſe caſes be $\frac{1}{4}$ of an Inch (as it is in the Glaſs of which the Speculum was made) the bright Light of the 34385th Ring ſhall emerge where the ſine of refraction is 1172, and that of the 34384th, 34383th and 34382th Ring where the ſine is 1659, 2031, and 2345 reſpectively. And in theſe Angles of refraction the Light of theſe Rings ſhall be propagated from the Speculum to the Chart, and there paint Rings about the white central round Spot of Light which we ſaid was the Light of the 34386th Ring. And the Semidiameters of theſe Rings ſhall ſubtend the Angles of refraction made at the concave ſurface of the Speculum, and by conſequence their Diameters ſhall be to the diſtance of the Chart from the Speculum as thoſe ſines of refraction doubled are to the Radius that is as 1172, 1659, 2031, and 2345, doubled are to 100000. And therefore if the diſtance of the Chart from the concave ſurface of the Speculum be ſix Feet (as it was in the third of theſe Obſervations) the Diameters of the Rings of this bright yellow Light upon the Chart ſhall be 1'688, 2'389, 2'925, 3'375 Inches: For theſe Diameters are to 6 Feet as the above-mentioned ſines doubled are to the Radius. Now theſe Diameters of the bright yellow Rings, thus found by computation are the very ſame with thoſe found in the third of theſe Obſervations by meaſuring them,